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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,590	07/23/2003	Dirk Heinrich	233812US0	7530

22850 7590 04/30/2008

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ART UNIT	PAPER NUMBER
1792	

NOTIFICATION DATE	DELIVERY MODE
04/30/2008	ELECTRONIC

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/624,590
Filing Date: July 23, 2003
Appellant(s): HEINRICH ET AL.

Daniel J. Pereira, Ph.D.
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/28/2008 appealing from the Office action mailed 6/5/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-7, 10-11, 15-17, 19 & 22.

Claim 21 is withdrawn from consideration as not directed to the elected method

Claims 8-9, 12-14, 18 & 20 have been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is incorrect.

There have been 2 amendments after final, the first on 11/5/2007 & the second on 11/28/2007, both not entered.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct, although the inventor's name for USPN 4,771,523 is misspelled, and should be -- Qureshi et al. --.

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have **not** been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief: the

rejection of claims 1-7, 10-11, 15-17, 19 & 22 under 35 USC 112 first & second paragraphs.

(7) Claims Appendix

A substantially correct copy of appealed claims 1-7, 10-11, 15-19 & 22 appears on pages 10-12 of the Appendix to the appellant's brief. The minor errors are as follows: in the last line of claim 15, an underlining symbol has been informally inserted (or left) between "Hz" & "before".

The examiner further notes that a previous informal alteration in lines 2 of original claims 5 & 6 that occurred in the amendment of 8/3/2006 (altered "μm" to --im-- & --jim--, respectively), & which was not previously noted on the record, has been changed back to its original form of "1000 μm" & "300 μm", respectively.

(8) Evidence Relied Upon

4,771,523	QURESHI et al.	09-1988
4,358,887	CREPS	11-1982
5,176,755	WINKLE, Sr. et al.	01-1993
3,616,983	KAMIMURA et al.	11-1971
3,560,239	FACER et al.	02-1971

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly

owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims **1-7, 10-11, 15-17, 19 & 22** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Qureshi et al.** (4,771,523), in view of **Winkle, Sr. et al.** (5,176,755) or **Creps** (4,358,887), and further in view of **Facer et al.** (3,560,239) and **Kamimura et al.** (3,616,983).

As previously discussed, Qureshi et al. (523) teach nylon coating metal tubing on the exterior via a sequence of steps that includes **cleaning**; then heating, then galvanizing, (then optionally metal treating, such as via a chromating or **phosphating**); then requiring **drying**, then **priming** with a sprayed **liquid**, then **preheating via induction heating**; then powder coating via a **fluidized bed technique** with **fusible powder**, such as nylon 11 or 12; then **induction heating which produces a high gloss** surface finish, i.e. smooth. Thereafter, Qureshi has an additional fluidized bed coating, which is not excluded by appellants' claims, and cooling/quenching. Qureshi teaches closely controlling the thickness of the coatings, where the thickness of the first powder coating is 2.5-4 ≈ 63-102 μm. See the abstract; figures; col. 1, lines 5-10 & 24-54; col. 2, lines 17-49 & 62-68; col. 3, lines 43-col. 5, lines 26 & 54-col. 6, lines 3, 11-30 & 37-41. Note during the induction post powder deposition heating that the coated material will inherently initially softened and smooth as it proceeds to heat sufficiently to melt. Note that induction heating inherently uses radio frequencies, but Qureshi differs by not disclosing what frequencies are employed.

It was noted that **Qureshi et al.** (523), when discussing fluidized bed processes on col. 4, lines 60-68, teach that such processes are known in the art and **cites USPN 3,616, 983 to Kamimura et al.** as employing such **fluidized bed processes**. While the primary reference has a schematic flow diagram

instead of a fully illustrated apparatus structure, Kamimura et al, whose processes are stated to be used in Qureshi et al., shows apparatus schematics that incorporate the heater 34, which may be induction heating, as attached to the input of the fluidized bed basin structure, inclusive of fluidized type dipping systems or fluidized type electrostaticspray systems (figure 1B & 5-9; col. 3, line 25-col. 4, line 44), where various apparatus show alternative flow configurations, including flow directions from all angles or from below, hence the apparatus/method of Qureshi et al. that teaches employing those of Kamimura et al., can be considered to incorporate the flow direction from above as desirable, & the inductive heaters in the structure of the fluidized bed basin, since how or where appellants' claims incorporate these heaters in the fluidized beds/basins' structure is not explicitly specified by the claim language, so is inclusive of incorporation at inputs or outputs which are part of the basin, thus consistent with taught process sequences, thus inclusion of the induction coil incorporated as part of the fluidizing bed basin in the independent claim, was not seen to provide patentable significance with respect to teachings of applied prior art, particularly the primary reference, as it incorporates the teachings of Kamimura et al.

It was previously noted that, Qureshi et al. does not teach that pulverulent fusable powder may be formed of a precipitated powder (as in claim 4), nor do they provide mean deviations for their coating thickness (as in claims 5-7), or disclose if their sprayed priming liquid contains a suspension, a solution, or a powder (related to claims 10-11 & 16). It would have been obvious to one of ordinary skill in the art to employ conventional means of initially forming a powder source material, which includes precipitating nylon materials from solution, which one may then mill to get the desired size of the pulverulent polymer, because use of a precipitated powder would require less work to get a powder to the desired size than starting with a solid block of polymer to grind.

As Qureshi et al. teaches closely controlling thicknesses of the powdered nylon coatings, it would have been obvious to one of ordinary skill in the art that the mean thickness deviations would have been

minimized, hence would have reasonably been expected to be controlled within limits of 20 or 30%, as claimed by appellants.

As suspensions or solutions are typical forms of liquid coating materials that may be sprayed and used as primers, it would have been obvious to one of ordinary skill in the art to use such typical means of formulating a liquid priming material due to suggestions of the primer being a liquid and expectations of these being effective means of delivery. Given that suspensions and solutions generally involve the use of solvents, the subsequent preheating step would inherently cause evaporation of solvent present to occur.

As previously discussed, the claims require induction heating using frequencies of 2000-10,000 Hz, i.e. 2-10 kHz. While Qureshi et al. does not disclose any particular frequency for use in their induction heating process to melt the powdered fusable powder, such as nylon, it would have been obvious to one of ordinary skill in the art to look to the prior art for appropriate frequencies at which to fuse the plastic powders as taught. Creps (abstract; col. 3, lines 33-43; and col. 5, lines 56-63) teach plastic coating metal pipes with use of the induction heaters employing 3000 Hz to melt plastic particles adhering thereto, and thus create a clear plastic coating over the entire surface of a pipe. Alternately & analogously, Winkle, Sr. et al. (abstract; col. 4, lines 39-53; col. 5, on 43-col. 6, line 15) teach coating a metal strip with a plastic powder that is melted via induction heating, where a low frequency of less than 10 kHz is preferably used, with teachings that the frequency employed depends on thicknesses of materials involved. From either of these teachings, it would have been obvious to one of ordinary skill in the art to determine via routine experimentation the appropriate frequencies to employ in Qureshi et al.'s induction heating process, in order to melt the taught fusable powders, such as nylon, using these suggested frequencies as the starting point for that routine experimentation, which therefore would have been expected to provide usable and effective frequencies as claimed due to the similarity of materials involved both as coating and substrate.

As previously discussed, Qureshi et al. does not in the body of it specification have explicit details of various claimed air movement systems employed in various heating and fluidized in steps, where the claims were amended to recite the air flush system & flow guide panels in the fluidized bed basin to require, where the air flush system positioned above the pipe is effective to "eliminate powder accumulations" & the one or more metal flow guide panels below the pipe is effective to "eliminate powder deficit and resultant pores on the underside of the pipe". However, Facer et al., is teaching an analogous process to be employed on cleaned, liquid primed, induction dried wires, to coat those wires or like elongated structures with powdered resins, inclusive of nylon, teach air movement in the various steps, such as fans (88) or suggested air manifolds (78) or air seals and guide panels (90), where col. 3, lines 58-62 teach that the system, inclusive of the fan, acts as a mean for drawing fumes and air, thus are flushing systems, and where as illustrated in figure 3, the fan, manifold system & guide panels are above the wire, and as taught on col. 3, lines 30-35, they functioned so as to "prevent agglomeration of the resin at the wire entrance and exit points", which is equivalent to the claimed "eliminate powder accumulation", as accumulation would be a form of agglomeration. Also, it was particularly noted that the fluidized bed powder coating chamber illustrated in figure 3, has on the bottom diffusion board 74 through which air passes to maintain the bed in the fluidized state, with inner wall 82 of manifolds 78 having closely spaced holes that are connected via conduit 86 to suction fan 88, thus having positioned above the object being coated an air system, which draws air out of the chamber, thus flushing it (col. 2, lines 35-40 & col. 3, lines 25-35). Note that diffusion board 74 is a planar surface, hence may be considered a panel(s), where the airflow through the diffusion board is **analogous** to that in figures 8 & 9 of Kamimura et al., clearly provides guidance to the powder, inclusive of guiding powder to the underside of the pipe due to its position, hence effective use of this configuration would have been expected to be effective of ensuring sufficient powder provided to the underside of the pipe, which would have been expected to prevent formation of undesired pores, i.e. holes, in that portion of the coating. While these references, of Facer et

al., Kamimura et al. or Qureshi et al. do not explicitly discuss powder deficit or a problem with pores on the underside of the elongated substrates being coated, the examiner takes notice that it is old and well-known that one purpose of using fluidized bed coating systems is to enable uniform coating of all sides of such three-dimensional objects. Hence, it would have been further obvious to one of ordinary skill in the art to employ such conventional means for air movement, and flow control configurations, as they would have provided affects as discussed in Facer et al., such as the ability to draw off fumes via suction caused by a fan, or to prevent agglomeration of the resin, as well as expected uniform coating provided by fluidized bed, which would have been equally advantageous in Qureshi et al, who suggests any known electrostatic spray or electrostatic fluidized bed processes known in the art may be employed (col. 4, lines 60-65), and would have provided cumulative fluidized bed processing details/instructions to those provided by Kamimura et al. suggested in Qureshi et al., as Facer et al. also suggest a related sequential process of coating a clean substrate, applying a primer to the wire, drying the primer, then preheating the substrate with an induction coil, followed by fluidized bed coating & more induction heating. In Facer et al, particularly see figures; abstract; col. 1, lines 54-71+; col. 2, lines 34-66; col. 3, lines 1-62.

Further concerning "one or more metal-flow panels position below the pipe", the claimed limitation does not say what is being guided or the means by which the panels provide guidance, however presumably it is the fluidized material or the gas fluidized in it, etc., since as amended the metal flow guide panels positions must enable the process "to eliminate powder deficit and resultant pores on the underside of the pipe", hence it continues to be noted that any surface with in the chamber will act as a guide towards fluidized materials in the chamber, including those below the substrate, with fluidized material being passed through it, thus reading on possible meanings of the flow guide panels. In Facer et al., the diffusion board 74 below the substrate, which is particularly blowing powder up towards the underside of the substrate, would clearly due to its configuration be effective for eliminating any deficit of powder under the substrate that could result in pores on the underside of the substrate, and is analogous to

structure shown in Kamimura et al. The materials that apparatus parts, such as diffusion boards, are made out of (due to context, the examiner has assumed that metal is what the claimed panels are made out of, not what is being guided) would have been expected to have been made of a durable material, which for processing chambers typically constitutes metal, hence it would've been obvious to one of ordinary skill in the art to employ such conventional construction materials for chambers due to their required structural integrity. Note that Kamimura et al.'s porous plate 41 in figures 8 or 9 could be considered a flow guide plate position as claimed (col. 4, lines 5-10 & 30-37), but also does not discuss the material of which is made, hence one of ordinary skill would have been expected to choose its construction material as discussed above. The material of Facer et al.'s similarly positioned diffusion plate is also not disclosed, however individually or in combination these references show the conventionality of panels positioned under substrates whose undersides are being coated & which affect the flow of the fluidized material so as to effectively coat those substrates, including their undersides.

GROUNDS NOT ON REVIEW

Claims 1-7, 10-11, 15-17, 19 & 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-7, 10-11, 15-17, 19 & 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Independent claim 1 has been amended such that the preamble now requires coating "a piper", which is by definition a person who pipes, which does not make sense in context of the body of the claim concerning treatment & coating a "pipe", thus the examiner believes that this is a typographical error, hence for purposes of examination over the art -- a pipe -- will be considered, instead of "a piper".

However as presently written, the claim has formal problems of the preamble directed to "a piper" not being commensurate in scope with the body of the claims & dependent claims directed to "the pipe", nor providing appropriate antecedent basis thereto, as well as the probably inadvertently introduced "piper" not being supported by the original specification, hence to officially constituting New Matter.

In claim 15, line 4, the insertion of "at a frequency from 2,000 Hz" between "coil" & "before melting" creates a phrase that is not idiomatic English & whose meaning is uncertain, since it has the appearance of starting to claim a range, but not finishing the phrase, such that the intent is unclear. However, given in the phraseology used else, wherein the claims concerning "frequency from 2,000 to 10,000 Hz", the amendment to claim 15 could be taken to mean an open ended range starting at 2000 Hz, which would not be supported by the specification, nor the original claim 15, as "a medium frequency", which the amendment to claim 15 appears to be replacing, is not an unlimitedly open ended range, nor do the specific frequency teachings found in specification (page 5, lines 3-10), provide for such an open-ended range, hence the amendment to claim 15 also appears to encompass New Matter as written.

(10) Response to Argument

On pages 5 & 7 of appellants' Brief, they have trice repeated virtually the entire coating limitation of independent claim 1 (i.e. lines 7-10), stating that it is not taught by the cited art, without saying what part of these four lines of description limitations is missing from the combined references of the rejection. The examiner notes that this limitation of "an induction coil incorporated in...coating basin" is inclusive of the coil being inside the basin or part of the basin structure, such as at input or output ports, hence is taught by the combination of Qureshi et al. & Kamimura et al. as discussed above. Appellants state on page 7, lines 1-3 of their Brief that "[Qureshi] is simply cited for coating pipes but as conceded by the office doesn't really teach anything about what is claimed", which is entirely incorrect, since as has always been continually contended by the office (as repeated above), Qureshi et al. teach significantly more than simply putting any coating on any pipes by any technique.

While Qureshi et al. & Kamimura et al. were seen to provide teachings encompassing flow from below &/or flow from above for coating procedures, these two references as previously discussed, do not provide the specific combination of the claimed air flush from above with the flow guide panels from below in a fluidized bed system, however the obviousness of this combination of details was supplied by Facer et al. Appellants mentioned the examiner's combination of Facer et al. with Qureshi et al. & Kamimura et al., in an overly generalized and overly paraphrased statement in two sentences in the middle of page 6 of their Brief, but never actually say what they believe is wrong with the combination or how they believe it fails to provide for the obviousness of the claimed limitations as discussed in the rejection repeated above. No other discussion of Facer et al. was found in appellants' Brief. The appellants have not discussed or provided evidence of why the official notice taken by the examiner in the previous & preceding rejection is incorrect, hence this notice concerning the obviousness of employing taught techniques to effect uniform coating remains un-refuted. Appellants' discuss the combination of Qureshi et al. & Kamimura et al. on pages 7-8 of their Brief, but don't discuss the teachings of Facer et al. combined with these references. Only discussing these two references, the primary reference plus the secondary reference of Kamimura et al. that has apparatus suggested for use by the primary reference, with essentially exclusion from the discussion of Facer et al., which was employed to show the obviousness of the specific combined flow orientation techniques not provided by the combination of Qureshi et al. & Kamimura et al., is not convincing of any error in the rejection as a whole.

With respect to the secondary references of Creps or Winkle et al., which appellants' discuss on the bottom of page 6, these references were supplied to alternatively show the obviousness of using the claimed frequencies, however appellants make no arguments concerning whether or not these showings of frequencies provide obviousness for this claimed range, for the process of Qureshi et al., or the process of Qureshi et al., in view of Kamimura et al. & Facer et al., as presented in the rejection, hence the obviousness of using the claimed frequencies has not been refuted. Appellants do make the argument

with respect to Winkle et al., that since it uses a spray gun arrangement, it "is not relevant to the presence of a fluidized-bed coating basin...", but since Kamimura et al. clearly shows that both fluidized bed & electrostatic spraying techniques are known to be equivalently effective for deposition of powdered plastic that may be fused by induction heating, this art is clearly relevant, especially as the techniques of depositing will not change the effect of the frequency on whether or not it heats the powder polymer coating sufficient to melt or fuse, as that effect is dependent on the thermal characteristics of the plastic powder & the inductive heating effects on the particular metal substrate.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Marianne L. Padgett/

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MLP/dictation software

4/(18, 21-22 & 25)/2008